Oak Ridge National Laboratory
Excess Flow Valve Survey Summary for
The Department of Transportation
Office of Pipeline Safety

BACKGROUND

An EFV is a safety device designed to automatically shut off the flow of fluid in a hose or piping service line is ruptured, thereby mitigating the impact of the rupture. The EFV technology was pioneered about 25 years ago with the development and use of spring actuated excess flow valves for natural gas service. An EFV is installed on the new service line or a renewed service line near the gas main.

The debate on the effectiveness of EFVs was recently resurrected by some safety advocates who want PHMSA/OPS to initiate rulemaking on mandating the installation of EFVs in gas distribution systems. PHMSA/OPS has already initiated a discussion with the National Association of Regulatory Utility Commissioners (NARUC) on EFVs, or options, to elevate safety in the natural gas distribution industry.

PROJECT SCOPE AND OBJECTIVE:

The primary objective of this EFV survey is to enable PHMSA/OPS acquire verifiable and measurable data and information on the operational history of EFV use in natural gas distribution systems of selected gas companies. Obtaining this information will involve the development of a questionnaire for surveying up to nine gas companies on their EFV experiences.

Surveys were collected from nine companies (Table 1) concerning their experiences with EFVs. Those surveys are included as Appendices A-I.

Table 1 Companies participating in the survey

Name	Title	Company
Steve Troch	Director of Engineering	Baltimore Gas and Electric
Gary Gibson	Manager, Natural Gas Distribution	City of Springfield
Joaquin Alphonso, Jr.	Manager, Regulatory Services	Consumers Energy
Mobeen Khan	Manager, System Enhancement	New Jersey Natural Gas
Willard Carey	Regulatory Leader–Federal	PSE&G
Mark Lauber	Superintendent of Maintenance Engineering	Laclede Gas Company
Jeff Borders	Principal Engineer	Pacific Gas and Electric
Kris Nichols	Assistant Vice President, Engineering	Nicor Gas
Michael Comstock	Gas System Superintendent	City of Mesa, Arizona

Summary of Data

Most companies were not installing EFVs before the regulation. After the implementation of the regulation most companies did a cost/benefit analysis to determine whether it was more cost effective to track notifications or make installations a matter of company policy. However, this applied to new services only. No one required installation of EFVs on existing services. The results of the analysis shows mixed results. Five companies require installation as part of

company policy and four make the decision voluntary. The prevailing opinion is that installing EFVs in new construction is relatively inexpensive, installation in existing construction is very expensive and difficult o justify on a cost/benefit basis.

Most utilities indicate the presence of an EFV both by a notation in the service record and the presence of a tag on the service itself. However, when collecting incident data a distinction is not made between third party damage to systems that have EFVs and those that do not. Also, very little data is available concerning actuations due to leaks or failures. However, a majority of the respondents indicated there was insufficient data to draw any conclusions about inadvertent valve actuations. It was noted that most of the damage to service lines was by third part excavation. During the interview process it was discovered that many of these incidents were upstream of the EFV making the valve ineffective as a safety device. As noted in the appendices, there are very few inadvertent valve actuations other known problems when the valves were required to actuate.

Generally, there were no reported reliability issues and of the respondents that utilized more than one manufacturer there were no reported differences in reliability among the dominant manufactures (UMAC, Powell, Dresser)

Based on the responses from these nine companies implementation generally appears to be based on the economics of compliance with the regulation rather than safety enhancement. Sufficient data may not be available to conclusively determine the benefit of EFVs solely from a safety standpoint.

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	Baltimore Gas and Electric
Mailing Address	:	1699 Leadenhall Drive Baltimore, MD 21230
Contact Name	:	Steve Troch
Contact Title	:	Director of Engineering
Phone Number	:	410.291.4540
Fax	:	
Email	:	Steve.Troch@bge.com
Service Area	:	
Number of Services:		460,000[1]

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?
   No
2. How many services currently have EFV's?
   Approximately 400
3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard?
   Installation is voluntary. EFVs not installed on systems where the system pressure is less than 10 psi.
4. For voluntary installations, how many homeowners have requested EFV installation on–

   a. Existing services? *0 (offered but not accepted)*

   b. New services? 400 *out of 54,000*

5. Is any part of the cost charged to the homeowner?
   The entire cost of installation is charged to the homeowner (material, installation, and test).
6. What is the incremental average cost to install an EFV?
   Average cost $120.00. Range is $100 to $1,000 (retrofit)
7. Which manufacturers' EFVs do you usually install?
   Dresser

[1] 460,000 Services (includes apartment complexes). Actual number of customers is approximately 650,000.

Is there a particular model? :
480 style

Is there a particular size? : *½" and 1 ¼" plastic; ¾" steel. Bleed by-reset type*

8. What is the range of operating pressures on services that you install EFVs on?
   99 psi
9. How do you alert service personnel that a service has an EFV?
   The information is listed as part of the service record.

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs?
    No reportable incidents on lines with EFVs. Data from 1999 and 2004 indicate a reduction in damage reports. In 1999 there were 200,000 locate requests with 3.5 damages/1000 locates. In 2004 there were 260,000 locate requests, with 2.4 damages/1000 locates. These numbers are for the entire system, not just the high pressure applications where an EFV could be installed. While reportable, these incidents may not have been significant enough to trigger an EFV.

    Incidents involving services where an EFV was installed were not a type or nature where damage to the piping was the primary cause of a problem, such as house fires.

11. What kind of investigation is performed by the company after an EFV is activated?
    No data.
12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed?
    NA – One manufacturer.

13. How many EFV actuations have been experienced due to gas line leaks or failures

    Before the meter. *No record*

    After the meter _____

14. How many inadvertent EFV actuations have been experienced
    No record / None reported.
    Due to excess demand _____

    Due to EFV failure _____

    Due to contaminants getting trapped in the EFV _____

    Total _____

15. What would you say your experience has been with the reliability on EFVs? Elaborate

on your experience?

Small sample size – Insufficient data

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?

$800 – $1,400 (estimate only)

17. On voluntary installations, who pays for the restoration in the event the EFV trips?

Customer

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?

No incidents relating to EFVs meeting the reporting criteria per part 191 of code.

19. Do you have data on how many times an EFV was actuated on a service with an EFV?

No data–very small sample.

20. Can you comment on what particular EFVs you have had the most success with?

No data–only used one type of EFV.

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	City Utilities of Springfield, MO
Mailing Address	:	P.O. Box 551 Springfield, MO 65801
Contact Name	:	Gary Gibson, P.E.
Contact Title	:	Manager – Natural Gas Distribution
Phone Number	:	417-831-8755
Fax	:	417-831-8545
Email	:	gary.gibson@cityutilities.net
Service Area	:	140 square miles
Number of Services:		74,000

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?
   No

2. How many services currently have EFV's? *Approximately 8,500*

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard? *Company Standards require installation of EFV's on all new single family residential gas services operating above 10 psig. It was felt at the time of the notification rule that it would be just as cost effective to install these valves as it would to keep track of the notification requirements. It was also felt that it was not politically correct to provide an extra "safety" device to only those willing or able to pay extra.*

4. For voluntary installations, how many homeowners have requested EFV installation on–

   a. Existing services? *NA*

   b. New services? *NA*

5. Is any part of the cost charged to the homeowner? *At the time we chose to install these on all new services we added the incremental cost to the cost for a new service.*

6. What is the incremental average cost to install an EFV? *$15.00*

7. Which manufacturers' EFVs do you usually install? *UMAC and Powell*

   Is there a particular model *UMAC Series 700 and Powell Series 800 for ¾" service and Powell 1800 on 1-1/4"*
   Is there a particular size? *3/4" ips and 1- ¼" ips*

8. What is the range of operating pressures on services that you install EFVs on? *10 – 60 psig*

9. How do you alert service personnel that a service has an EFV? *The gas service card has a box that is checked when an EFV is present. We also wire a tag to the meter bar on all services with an EFV and put a sticker on the regulator.*

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs? *Last year there were 240 excavation 3rd party damages on the system with 207 of those on service lines. We do not have the number of service line hits that were on services with EFV's. However, most damages on services seem to be in areas of new developments so all of these services would have EFV's. I would estimate 70% of the service line damages last year were on services with EFV's.*

11. What kind of investigation is performed by the company after an EFV is activated? Routine leak repair and investigation is done. *We do not do any additional investigation if the service has an EFV.*

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed? *We have not had a problem associated with a certain manufacturer.*

13. How many EFV actuations have been experienced due to gas line leaks or failures

    Before the meter. *unknown*

    After the meter 0 – *EFV's are not designed to activate for leaks downstream of the meter.*

14. How many inadvertent EFV actuations have been experienced

    Due to excess demand *0*
    Due to EFV failure *1*
    Due to contaminants getting trapped in the EFV *0*
    Total *1*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience? *We have not experienced any reliability issues with Excess Flow Valves in the short term since we have been installing them. The do not malfunction and have operated when they were designed to operate.*

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?

    $500.00 The company would pay for the charges.

17. On voluntary installations, who pays for the restoration in the event the EFV trips? *NA*

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?
    See DOT incident reports.

19. Do you have data on how many times an EFV was actuated on a service with an EFV?
    No Data

20. Can you comment on what particular EFVs you have had the most success with?

    Have not had better success with one EFV over another.

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	Consumers Energy
Mailing Address	:	1945 W. Parnall Road Jackson, Michigan 49201 P-23421
Contact Name	:	Joaquin J Affonso Jr.
Contact Title	:	Manager Regulatory Services
Phone Number	:	517.788.1835
Fax	:	517.788.1369
Email	:	jjaffonso@cmsenergy.com
Service Area	:	Michigan
Number of Services:		1,550,000

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?

Yes, Record keeping is not free and has multiple opportunities to be noncompliant. Material cost is relatively low and installation cost is nil.

2. How many services currently have EFV's? *145,000*

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard?

Installation is company policy and the drivers were low cost verses managing thousands of documents with opportunity for noncompliance and we believe the intent is for additional safety in the field and paperwork in the office does not provide additional safety.

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? _____
   b. New services? _____

5. Is any part of the cost charged to the homeowner? *No*

6. What is the incremental average cost to install an EFV?
   Material cost is approximately $6.00. Contractors are not paid any extra for the installation on a new service and company installation costs are too low to adequately measure. If a company uses a service tee with the EFV already attached then there are no additional fuses. If the EFV is separate then there is only one additional fuse.

7. Which manufacturers' EFVs do you usually install?
   Dresser, RWLyall, and we currently use UMAC

   Is there a particular model? *Model 350 for the majority of our new service installations*

   Is there a particular size? *400, 700,800, and 1800*

8. What is the range of operating pressures on services that you install EFVs on?
   Our primary distribution system has an MAOP of 60 psig. We do not install EFVs on our low pressure 8 to 10 inch water column system.

9. How do you alert service personnel that a service has an EFV?
   The service record diagram shows that an EFV has been installed

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs?
    We do keep records of all third party service damages

11. What kind of investigation is performed by the company after an EFV is activated?
    If the EFV does not reset itself we will remove the EFV and send it to our materials expert. If the EFV resets itself then a customer energy service person will evaluate the service for connected load and other flow issues.

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed?

13. How many EFV actuations have been experienced due to gas line leaks or failures
    Before the meter. *Other than third party damage none documented*
    After the meter *None documented*

14. How many inadvertent EFV actuations have been experienced

    Due to excess demand*12 to 15 when we were new at installing EFVs now there are very few*

    Due to EFV failure *one installed incorrectly due to markings on the EFV*

    Due to contaminants getting trapped in the EFV *estimate 45*
    Total *approximately 60*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience?
    Overall we have had excellent results with EFV installations once we became familiar with them. Now they are a routine installation with few or no current issues. See comments below.

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    Home owners are responsible only if they damage the EFV or add additional load such as a generator or large pool heater that activates the valve requiring replacement.

17. On voluntary installations, who pays for the restoration in the event the EFV trips?

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?
    Not sure what you mean by an accident. Do you mean a damage or leak that resulted in an incident? We keep information on all reportable incidents.

19. Do you have data on how many times an EFV was actuated on a service with an EFV?
    No

20. Can you comment on what particular EFVs you have had the most success with?
    All of the EFVs have performed well and it becomes an economic decision not a operating decision if all manufactures provide an equal product.

The following is anecdotal data from our field teams.

We do not track EFV activations during damages, but damages are the major cause of EFV activations.

Approximately 30 to 35 times a year a contractor will break the service and either not know he broke it or will ignore the damage so as to continue to work and wait for the homeowner to call in a no gas call or a leak.

EFV valves are activating correctly during damages.

We have never experienced an EFV failing "open". In our experience, they always trip as they are designed to do. Sometimes there is a real challenge trying to determine a service break or damage on EFV equipped services. A lot of mysteries are covered up by irrigation installers, tree movers and landscaping contractors. They can sever a service and not even know it!

We get real activations from damages where one has been installed. A Leak at the riser / lockwing probably would not trip it.

We have had damages where they have functioned. Most of those result in routine repair. Rarely, but I am aware a few cases when the service was damaged and the damaging party was not aware or did not report the leak and the leak was reported later in the day.

The issues of installation and purging when we first started using the EFVs have gone away.

All the damages that I have been on where an EFV was installed functioned properly. Too good in some cases where the contractor did not know that the service was broken or assumed that the service was dead and buried the service.

Other issues:

Can't use service to by-pass around main damage.
Can't back blow service or install alcohol into the main through EFV valve.
Note in all cases we have not had to evacuate any homes or businesses.
Overall the team felt that the EFV valves were doing the job.

Moisture and impurities seem to be the biggest problems along with what seems to be a huge variable in actual flow rates of the units. Some crew members stated that they have used two or three on the same service in order to find one that appears to flow correctly.

There is a long term concern with valves failing over time in a similar manner as buried securities, trip-outs and fracture discs.

Excess flow valves make it a little harder to blow out a service - minor inconvenience

Also when purging a new service, it's difficult to purge all of the dirt and foreign matter that may be in the pipe, because the valve will trip.

The location of the EFV installation requires some thought for certain situations. In some situations, a valve on a long side service may be better to be installed somewhere other than at the service tee.

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	New Jersey Natural Gas Company
Mailing Address	:	1415 Wyckoff Rd., P.O. Box 1464 Wall, NJ 07719
Contact Name	:	Mr. Mobeen Khan
Contact Title	:	Manager, System Enhancement
Phone Number	:	(732) 919-8035
Fax	:	(732) 919-0735
Email	:	mukhan@njng.com
Service Area	:	Monmouth, Ocean, parts of Middlesex and Morris Counties
Number of Services:		426,882 (2004 PHMSA F 7100.1-1)

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?
   Safety of gas distribution system

2. How many services currently have EFV's?
   Approximately 132,000

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard?
   Company Policy. Understanding with State Board of Public Utilities based on an incident. The installation is part of NJNG service installation standard.

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? _____
   b. New services? _____

5. Is any part of the cost charged to the homeowner?
   NO.

6. What is the incremental average cost to install an EFV?
   Less than $15.00 per unit

7. Which manufacturers' EFVs do you usually install? *UMAC*
   Is there a particular model *Series 550 and 700*
   Is there a particular size? *1/2" and 1"*

8. What is the range of operating pressures on services that you install EFVs on?
   10 psig thru 125 psig

9. How do you alert service personnel that a service has an EFV?
   Metal tag is installed on the service regulator

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs? *Records not kept*

11. What kind of investigation is performed by the company after an EFV is activated?
    A trip test is performed to confirm efv is operating as designed on all new and renewed services

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed?

13. How many EFV actuations have been experienced due to gas line leaks or failures
    Before the meter. _____

    After the meter _____

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand _____

    Due to EFV failure _____

    Due to contaminants getting trapped in the EFV _____

    Total _____

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience?
    Positive for the most part, however sometimes service lines are broken and since no gas is blowing the excavator do not inform the gas company, and sometimes excavators do not know that they have damaged the service line.

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    $_____

17. On voluntary installations, who pays for the restoration in the event the EFV trips?

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?

19. Do you have data on how many times an EFV was actuated on a service with an EFV?

20. Can you comment on what particular EFVs you have had the most success with?
    UMAC

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	Public Service Electric & Gas Company
Mailing Address	:	80 Park Plaza, T-14 Newark, NJ 07102
Contact Name	:	Willard S. Carey
Contact Title	:	Regulatory Leader - Federal
Phone Number	:	973-430-7833
Fax	:	973-430-7826
Email	:	willard.carey@pseg.com
Service Area	:	New Jersey
Number of Services:		1,215,000

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?
   No. We approved their use on 4/29/98

2. How many services currently have EFV's?
   Approximately 51,000

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard?
   EFVs are installed as part of company standard

4. For voluntary installations, how many homeowners have requested EFV installation on– N/A
   a. Existing services? _____
   b. New services? _____

5. Is any part of the cost charged to the homeowner?
   No

6. What is the incremental average cost to install an EFV? *The cost of the EFV*

7. Which manufacturers' EFVs do you usually install?
   UMAC

Is there a particular model?

Is there a particular size? ¾", 1 ¼"

8. What is the range of operating pressures on services that you install EFVs on?
   Those operating above 10 psi

9. How do you alert service personnel that a service has an EFV?
   We install al metal tag at the head of the service

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs?
    1,187 3rd party damages. Unknown as to EFV on line.

11. What kind of investigation is performed by the company after an EFV is activated?
    None

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed?
    Only use UMAC

13. How many EFV actuations have been experienced due to gas line leaks or failures
    Before the meter: *Unknown*
    After the meter: *Unknown*

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand: *Unkown*
    Due to EFV failure: *Unknown*
    Due to contaminants getting trapped in the EFV: *Unknown*
    Total: *Unknown*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience?
    Very few false closures

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    $ We use EFV's with blow

17. On voluntary installations, who pays for the restoration in the event the EFV trips?
    N/A

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?
    No data relating to EFV/No EFV

19. Do you have data on how many times an EFV was actuated on a service with an EFV? *No*

20. Can you comment on what particular EFVs you have had the most success with? *UMAC*

Operator Data (This data is for internal tracking use ONLY and will not be published)	
Company Name :	Laclede Gas Company
Mailing Address :	3950 Forest Park Avenue St. Louis, Missouri 63108
Contact Name :	Mark Lauber
Contact Title :	Superintendent of Maintenance Engineering
Phone Number :	314-658-5413
Fax :	314-535-5075
Email :	Mlauber@lacledegas.com
Service Area :	St. Louis Metropolitan Area
Number of Services:	596,620

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records? *No.*

2. How many services currently have EFV's? *Approximately 1,500.*

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard? *Voluntary.*

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? *300 annually*

5. Is any part of the cost charged to the homeowner? *Yes*

6. What is the incremental average cost to install an EFV? *$45*

7. Which manufacturers' EFVs do you usually install?
   Is there a particular model *UMAC; For PE 10-60 psig - Models 41, 424, 74, 1; For Steel 10-60 psig - Model 1; For Steel up to 300 psig –Model 14.*

   Is there a particular size? *5/8-inch O.D. PE, 1 1/8-inch O.D. PE, ¾-inch IPS Steel.*

8. What is the range of operating pressures on services that you install EFVs on? *10 psig to 300 psig.*

9. How do you alert service personnel that a service has an EFV? *Riser tags and customer information system documentation.*

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs? *There is an average of approximately one third-party damage incident per year on gas mains. No third party damage incidents on service lines have occurred in recent history.*

11. What kind of investigation is performed by the company after an EFV is activated? *General repair information is documented and indicates if an EFV was repaired.*

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed*? NA*

13. How many EFV actuations have been experienced due to gas line leaks or failures

    Before the meter. *Unknown*
    After the meter *NA*

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand *Unknown*
    Due to EFV failure *Unknown*
    Due to contaminants getting trapped in the EFV *Unknown*
    Total *Unknown*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience? *We believe these EFVs have good reliability and have had very few inadvertent actuations.*

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    $*560, The customer is responsible for cost, however, no customers have been charged to date.*

17. On voluntary installations, who pays for the restoration in the event the EFV trips? *See answer to 16. above.*

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted? Yes.

19. Do you have data on how many times an EFV was actuated on a service with an EFV?
    No.

20. Can you comment on what particular EFVs you have had the most success with?
    No.

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	Pacific Gas and Electric Company
Mailing Address	:	Mail Code H15E P.O. Box 770000 San Francisco, CA 94177-0001
Contact Name	:	Jeff Borders
Contact Title	:	Principal Engineer
Phone Number	:	(415) 973-5568
Fax	:	(415) 973-7707
Email	:	jpb0@pge.com
Service Area	:	Northern and Central California
Number of Services:		3,170,023 (as of 12/31/04)

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records?
   We were not installing EFVs before the regulation

2. How many services currently have EFV's?
   We do not keep track of which services have EFVs and which do not. However, since starting the program in 1999, we estimate installing about 15,000 per year. This would equate to approximately 75,000 installed EFVs as of 12/31/04

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard?
   During our evaluation of the regulation, our estimates indicated that it would be less expensive to voluntarily install EFVs than to track and process customer notifications. Therefore, our company chose to voluntarily install EFVs per the regulation.

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? *Not applicable*
   b. New services? Not applicable

5. Is any part of the cost charged to the homeowner? *Not applicable*

6. What is the incremental average cost to install an EFV? *$50*

7. Which manufacturers' EFVs do you usually install? *Perfection/Powell*
   Is there a particular model *90% Series 800; 10% Series 1800; <1% Series 400*
   Is there a particular size? *85% ½" CTS; 15% 1" CTS*

8. What is the range of operating pressures on services that you install EFVs on?
   10 psig – 60 psig

9. How do you alert service personnel that a service has an EFV?
   A stainless steel tag is installed on the service riser, near the shut-off valve. Service records also indicate whether an EFV is installed.

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs?
    In 2004, there were 3,332 third party damages, of which, 2,594 were on service lines. We do not track whether an EFV was present on a service involved in a third party incident. However, we could estimate that since we have approximately 2% of our service lines equipped with EFVs, then we could estimate that approximately 50 incidents could have involved service lines with EFVs in 2004.

11. What kind of investigation is performed by the company after an EFV is activated?
    A material problem report is generated if the EFV will not reset, or if the EFV repeatedly trips.

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed? *Not Applicable*.

13. How many EFV actuations have been experienced due to gas line leaks or failures
    All company owned EFVs are installed before the meter. We do not track the number of all failures, but have documentation on approximately 25 failures.

    Before the meter. _____
    After the meter _____

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand _____
    Due to EFV failure _____
    Due to contaminants getting trapped in the EFV _____
    Total *Approximately 25*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience?
    Given the low number of failures, the EFV devices are very reliable.

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    The restoration cost, if the EFV can be re-set, is very low, estimated at $100.

However, if the EFV must be replaced, the average cost is approximately $2000. As mentioned above, we have had approximately 25 such EFV replacements.

17. On voluntary installations, who pays for the restoration in the event the EFV trips?
    The Company pays directly as part of its regulated business.

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted?
    In 1998, our company had 2,072 third party damage incidents (compared with 3,332 in 2004) It should be noted that EFV installation does not prevent excavation damage, only mitigates the impact if a service w/ EFV installation is severed.

19. Do you have data on how many times an EFV was actuated on a service with an EFV?
    No data available.

20. Can you comment on what particular EFVs you have had the most success with?
    We use only one manufacturer, Perfection Corporation fittings containing Powell EFVs.

Operator Data (This data is for internal tracking use ONLY and will not be published)	
Company Name :	Nicor Gas
Mailing Address :	Engineering, 3W 1844 Ferry Road Naperville, Illinois 60563
Contact Name :	Kris Nichols
Contact Title :	Assistant Vice President Engineering
Phone Number :	630-983-8676 ext. 2427
Fax :	630-983-4028
Email :	knichol@nicor.com
Service Area :	Northern Illinois
Number of Services:	Approx. 1.9M

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records? *No.*

2. How many services currently have EFV's? *644 installed and 78 pending installation*.

3. Is EFV installation voluntary or required by company policy? Can you comment on the policy drivers? Is installation part of a standard? *Nicor conducts Customer Notification per 192.383.*

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? *NA*
   b. New services? *N/A*

5. Is any part of the cost charged to the homeowner? *Yes.*

6. What is the incremental average cost to install an EFV? *$50*

7. Which manufacturers' EFVs do you usually install? *UMAC*
   Is there a particular model *Model 41, Series 350 and 1800*
   Is there a particular size? *1/2" and 1"*

8. What is the range of operating pressures on services that you install EFVs on? *10-60 psig*

(including on downstream side of first stage regulators.)

9. How do you alert service personnel that a service has an EFV?
   The customer service pipe screen contains a field for indication of EFV installation. Also, a metal tag supplied with the EFV is affixed to the service riser.

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? Similarly, do you know how many third-part damage incidents were there on service lines with EFVs?
    In 2004 – Nicor experiences 4,207 service line hits. Nicor does not track hits on service lines with EFVs.

11. What kind of investigation is performed by the company after an EFV is activated? *The EFV is removed and sent to the manufacturer for investigation.*

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed? *N/A*

13. How many EFV actuations have been experienced due to gas line leaks or failures
    Before the meter. *Unknown*
    After the meter *None*

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand *6*
    Due to EFV failure *0*
    Due to contaminants getting trapped in the EFV *0*
    Total 6

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience? *Not enough installed to measure reliability*.

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages?
    $500-1,500 Homeower is responsible for the cost but Nicor has not been charging customers for the closures due to excess demand

17. On voluntary installations, who pays for the restoration in the event the EFV trips? *N/A*

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted? *No*.

19. Do you have data on how many times an EFV was actuated on a service with an EFV? *No*.

20. Can you comment on what particular EFVs you have had the most success with? *Nicor has only used one brand – UMAC.*

Operator Data (This data is for internal tracking use ONLY and will not be published)		
Company Name	:	City of Mesa, Arizona
Mailing Address	:	P.O. Box 1466 Mesa, Arizona 85283
Contact Name	:	Michael Comstock
Contact Title	:	Gas System Superintendent
Phone Number	:	480-644-2490
Fax	:	480-644-3336
Email	:	Michael.Comstock@cityofmesa.org
Service Area	:	City of Mesa, Arizona – Magma Gas System, Pinal County, Az.
Number of Services:		48,000 – (F.Y. 2005)

1. Were you installing EFVs before the regulation? If you did, why did you install it versus keeping records? *No*

2. How many services currently have EFV's? *Less than 20 (as of 6-9-05)*

3. Is EFV installation voluntary or required by company policy? Voluntary, based on the customer's decision to install. Can you comment on the policy drivers? *When the regulation was implemented, City of Mesa's (COM) cost benefit study indicated it was less costly to track and monitor than to just install as a standard practice. Is installation part of a standard? Yes, when COM installs them, there is a standard installation that has been designed by COM Gas System Engineers.*

4. For voluntary installations, how many homeowners have requested EFV installation on–
   a. Existing services? *0*
   b. New services? *Less than 20.*

5. Is any part of the cost charged to the homeowner? *Eighty ($80) dollars to cover the cost of the valve and what labor there is to install it.*

6. What is the incremental average cost to install an EFV? *Twenty ($20) dollars*

7. Which manufacturers' EFVs do you usually install? *Dresser Industries or UMAC Incorporated.*
   Is there a particular model *DI – Style 480 High Capacity, UMAC – Series 1800*
   Is there a particular size? *See Above*

8. What is the range of operating pressures on services that you install EFVs on? *COM distribution system operates at 20 psig.*

9. How do you alert service personnel that a service has an EFV? *By indication on the service riser , through the placement of a flat washer, stamped "EFV", below the service valve.*

10. Do you know how many third-party damage incidents per year there were on your entire distribution system? *COM has on average 44 hits per year. This data has been tracked since 1996. However, COM has seen a significant increase in 3rd party damages over the last 4 years as construction activities have increased. Over this period, COM has experienced on average 64.75 hits per year. Similarly, do you know how many third-part damage incidents were there on service lines with EFVs? COM does not have a record of third party damage on a service line with an EFV.*

11. What kind of investigation is performed by the company after an EFV is activated? *COM has not had an activation to date.*

12. For companies using EFVs from different manufacturers, has there been a pattern of failure that companies have noticed? *NO*

13. How many EFV actuations have been experienced due to gas line leaks or failures
    Before the meter. *NONE*
    After the meter *NONE*

14. How many inadvertent EFV actuations have been experienced
    Due to excess demand *NONE*
    Due to EFV failure *NONE*
    Due to contaminants getting trapped in the EFV *NONE*
    Total *Zero*

15. What would you say your experience has been with the reliability on EFVs? Elaborate on your experience? *In Mesa, the reliability and performance of EFV's have been as designed. There have been no false closures. The few that have been installed have performed as required.*

16. What is the average restoration cost of inadvertent EFV actuations? Is the homeowner or company responsible for any damages? *COM has not had to determine that cost. If this did happen the Homeowner would be responsible.*

17. On voluntary installations, who pays for the restoration in the event the EFV trips? *The Homeowner*.

18. For your system with EFVs, do you have data showing, on average, how many accidents/year occurred before your EFV installation standard was enacted? *No*

19. Do you have data on how many times an EFV was actuated on a service with an EFV? *No*

20. Can you comment on what particular EFVs you have had the most success with? *COM has two types available for installation. Neither one has outperformed the other.*